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(56) Documents Cited

GB 2246491 A GB 2191611 A GB 2169475 A  
GB 2101842 A GB 2063010 A EP 0070697 A2

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## (54) Entering data into electronic personal organisers

(57) Name, address, telephone and other personal or company information printed on business stationery, advertisements and in telephone directories is also printed in a machine readable form such as a bar code. A protocol is used to determine how the machine readable data is compressed or encoded such that it can be read and decoded 32, 34 according to a standard form to be entered automatically into an electronic personal organiser. The electronic personal organiser (10, Fig 1) may be in the form of a small pocket-sized device, mobile telephone, or an applications software package loaded onto a lap-top or other computer system and includes a database 42 for storing the name, address, telephone and other information as directory data entries; means 30 for storing the directory data into the database; an opto-electronic data input device 20 adapted to read the printed data pattern in a machine-readable, predetermined, structured form; and optionally a telephone tone dialler 60 and auxiliary input/output facility 50.

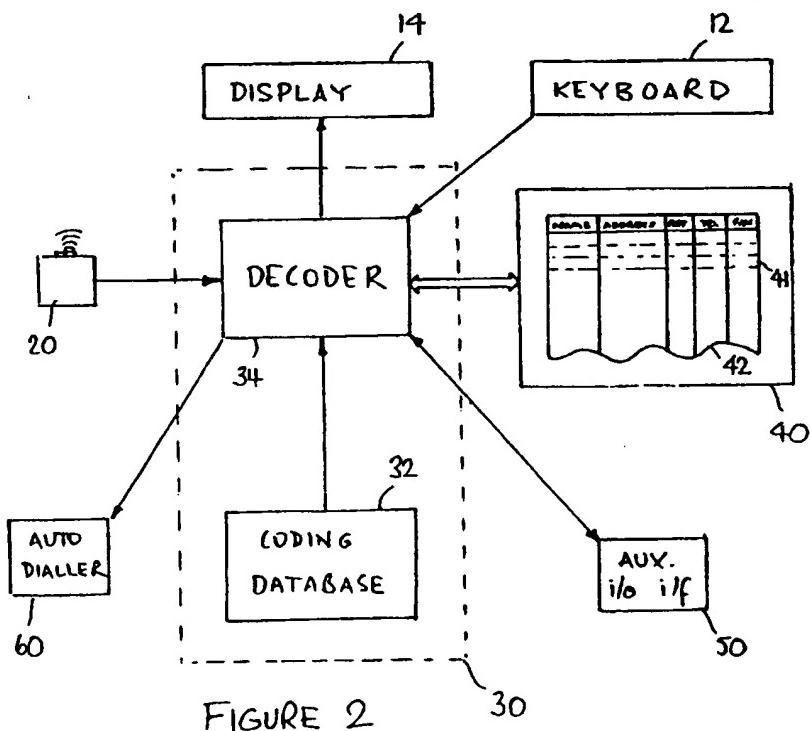


FIGURE 2

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FIGURE 1

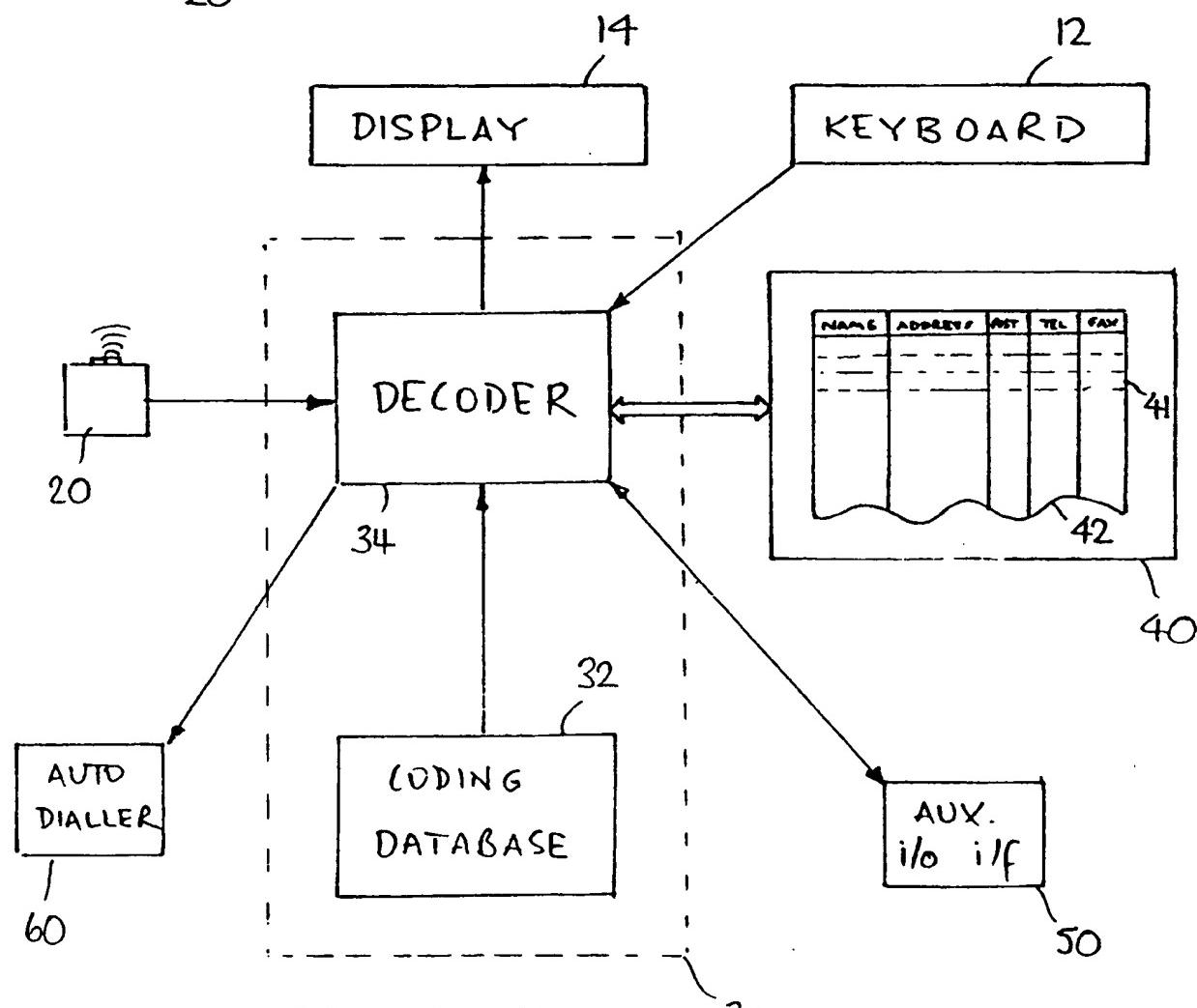
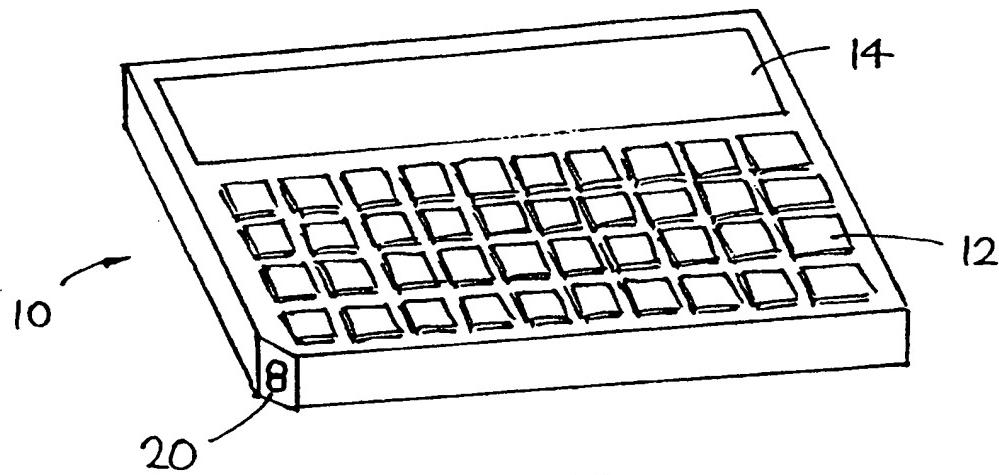


FIGURE 2

**IMPROVEMENTS IN AND RELATING TO ELECTRONIC  
PERSONAL ORGANISERS**

- The present invention relates to electronic databases, and in
- 5 particular to electronic databases adapted to store and retrieve personal names, company names, addresses, telephone numbers and other personal information.
- There has been a considerable growth in the use of electronic
- 10 personal organisers, either in the form of small, hand-held or pocket-sized dedicated devices, or as software applications packages loaded into lap-top or other personal computers, or loaded into personal digital assistant or the like.
- 15 Such personal organisers invariably include a personal telephone directory and address book facility, in which a user may store details of his or her own personal contacts. This data is hereinafter referred to as directory data.
- 20 Such directory data is usually obtained either verbally from personal contact or, commonly, by reference to business cards or other business stationery, by reference to printed advertisements or by reference to published telephone directories.
- 25 Electronic personal organisers offer an attractive number of features such as: the quantity of information which can be conveniently and compactly carried; the speed with which a specified name or address can be retrieved and displayed; the ability to automatically dial retrieved telephone numbers using tone dialling signals; and the ability to search

for classes of information to retrieve a set of matching names and addresses.

However, there exists a major disadvantage of electronic personal  
5 organisers. Although the speed and ease of use is generally excellent once  
the data is actually loaded, the activity of loading all of one's personal  
contact names and addresses is tediously slow because it is limited by  
keyboard entry. Each directory data entry may require of the order of  
100—150 keystrokes to enter all of the relevant information. At a  
10 conference or trade fair, one may collect a large number of business cards  
for which it is desirable to enter all of the data onto a personal directory  
database, eg. in order that it may be used for a contact follow-up business  
plan. Clearly, entry of the data from such a large number of cards is time  
consuming and thus is often not carried out.

15

Although voice recognition systems are being developed, they are  
not yet at a stage when they could readily or economically be incorporated  
into such electronic personal organisers to reliably and easily read  
directory data into the personal organiser. The same is generally true of  
20 optical character scanners which effectively place a graphics image of the  
scanned page into memory or attempt to interpret printed characters with  
limited degree of success.

With both of these developing methods for data entry for computer  
25 systems, there is a further problem when applied to the storage of  
directory information. The class or attribute of each data item must also  
be known by the system receiving the directory information in order for  
it to be usefully installed into the correct fields within a directory  
database: ie. whether a particular character string being input refers to a  
30 name, an address, a geographical area, a telephone number etc. If such

structural information is not preserved on data entry, the database cannot usefully be searched.

5       What is required is a small, cheap and convenient method of electronic data entry capable of transferring a limited quantity of information from a printed form to an electronic form while preserving its structure as inferred from the printed form, ie. distinguishing names, addresses, cities, telephone numbers etc. from one another.

10      It is an object of the present invention to provide a convenient method of storing directory data into an electronic personal organiser or the like.

15      In accordance with one aspect of the present invention, there is provided an electronic personal organiser comprising a database for storing directory data, means for storing directory data within the database, and an opto-electronic data input device adapted to read a printed data pattern which includes directory data in a machine-readable predetermined structured form. A business card or business stationery 20 item having directory data information corresponding to an individual or company printed thereon in a human readable form, and having the directory data information also printed thereon in an opto-electronic, machine readable form having a predetermined structure to delineate name, address and telephone number data fields.

25

The present invention will now be described by way of example with reference to the accompanying drawings in which:

30      Figure 1 shows a pocket-sized, electronic personal organiser in accordance with the present invention; and

Figure 2 shows a schematic block diagram of parts of the electronic personal organiser of figure 1.

With reference to figures 1 and 2 there is shown a pocket-sized  
5 electronic personal organiser 10 having a known keyboard input interface 12 and a known display output device 14. The organiser 10 may also include a number of known electronic interfaces such as serial or parallel ports 50 for interconnection with other computer systems, fax / modems and the like.

10

The organiser 10 includes an opto-electronic data input device 20 located on, for example, a suitable corner edge of the organiser. This device preferably comprises a bar code scanner using low power LED technology. Bar code scanners are well known in a number of fields, and  
15 will not be discussed in any detail here. The bar code scanner 20 is connected to a memory 40 in the electronic personal organiser via an appropriate storage interface means 30 which decodes the bar codes scanned in accordance with a particular protocol to be described hereinafter.

20

According to one aspect of the present invention, it has been recognized that the use of bar code technology is particularly suited to the present system for a number of reasons.

25

Firstly, it is a low-cost and well-tested technology used in a number of applications, and is particularly suited to low data density applications. The entry of directory data can be adapted, according to the present invention, to a low density data input operation. Secondly, bar codes can readily be printed, using known print technology onto paper-based systems  
30 at little or no extra cost. It will be understood, however, that the present

invention is not restricted to bar codes, but is applicable to any suitable machine readable printed data.

In order for the electronic personal organiser 10 to correctly read  
5 directory data, the bar code data is structured according to a predetermined protocol to enable the storage interface means 30 to correctly identify the requisite attributes of each item of data stored. The bar code data may also be encoded to allow substantial data compression.

10 The data items which make up an entry 41 in a directory 42 stored in memory 40 are, typically (though not exclusively or exhaustively), personal name, title or job function, company name, address, telephone and/or fax numbers. It is possible to encode such information quite compactly, using bar codes, by applying suitable data compression to the  
15 information.

Firstly, key aspects of a UK address can readily be determined simply by reference to all or to part of the postcode. For example, (i) the post town, city or area therein can be uniquely identified simply by  
20 reference to the first two, three or four characters of a post code; (ii) the street address can be uniquely identified by reference to the entire six or seven character postcode.

In case (i), a limited database of postcode information is stored  
25 permanently in the organiser 10 in a coding database 32, and town, city, county information is not stored in the directory database 40. In case (ii), substantial data compression is achieved, and a larger coding database 32 is required to permanently store full postcode data, but this allows considerable compression of the data to be read via optical scanner 20,  
30 and allows substantial compression of the data to be stored in directory 42

to approximately 8 to 10 characters for each address, partially offsetting the increased memory requirement of coding database 32.

There is therefore a balance to be struck between the amount of  
5 coding database memory 32 available in the personal organiser to store full postcode information and the amount of data stored for each entry 41 in directory database 42 (and thereby to the degree of bar code compression required).

10 Similar provisions prevail in other countries: for example, use of the ZIP code in the United States as an alternative to the UK postcode.

Telephone information may similarly be compressed. Once a city or region is known, for example from the post- or ZIP-code, the telephone  
15 area dialling code may be inferred. Prefixing a telephone number with its international dialling code would also serve to identify a country with only two digits.

Still further data compression is possible by encoding certain other  
20 common data strings, and using positional representation within the bar code to infer which set of encoded data strings should be referenced. For example, if the information is to be encoded into the bar code in the sequence of fields SURNAME - FORENAME - POSITION - COMPANY - STREET ADDRESS - POST/ZIP CODE - TEL NO - FAX NO, then a number of  
25 predetermined codes can be allocated: for abbreviating common address components, eg. "street", "road", "avenue", "industrial estate" when used within the STREET ADDRESS field; for abbreviating common forenames when used within the FORENAME field, and common surnames when used in the SURNAME field; and for abbreviating common job descriptions or professional titles (eg. "Director", "Engineer", "Sales

Executive", "Chartered Accountant") when used in the POSITION field. Limited numbers of large international organisations may also be encoded within the COMPANY field.

5       Organisations producing business cards for their employees can then have a small bar code printed, for example on the reverse side of the business card, or close to one edge. Similarly, letterhead stationery can be printed with a bar code. Telephone directories (business or residential) could similarly be printed with bar codes. In particular, advertisement  
10 boxes in newspapers, magazines, telephone directory yellow pages and the like could all be supplemented with a bar code according to the present invention.

15      The bar code will be defined according to a standardized protocol, and a null character could be provided for any field where no information is provided to preserve positional integrity of fields. For example, if only name and telephone number are provided, a sequence of null characters would suppress use of any other fields.

20      Preferably, the individual fields would not be fixed length fields, but variable length, delimited by a suitable delimiter character or bar width (in this case, null characters could be dispensed with, as sequential delimiting characters would have the same effect). In this manner, structured short, encoded data will result in very small codes, and  
25 similarly structured, but longer non-encoded data can still be included at the expense of a slightly greater area of bar code.

30      Thus, in use, optical scanner 20 reads a bar code which is passed to a decoder 34. Decoder 34 identifies the relevant fields of the bar code, and passes them into the appropriate fields of an entry 41 in directory

database 42. Decoding need not take place at this stage, although in practice, it is preferable that it does so in order for the system to identify whether data has been correctly read and understood by the system. For each field which is encoded, the decoder 34 checks coding database 32 to establish whether the decoded information is available to it, and if desired, displays the decoded information onto display output 14 in order that the user may check it has been received correctly. If it has, the encoded information is stored in a directory database entry 41. Amendments to errors may be entered via keyboard 12.

10

For information retrieval, the keyboard input is used in known manner to search directory database for a search string. Before the query is processed, it will be converted, if necessary, by decoder 34 to convert any codable search strings in the search query to their encoded form by reference to coding database 32.

Any matching string entries in directory database 42 can be extracted and fully decoded by decoder 34 prior to output on display 14.

20

It will be understood that input / output need not be restricted to keyboard / display, and auxiliary input / output facilities 50 may also be provided, or a telephone tone dialler audio output 60 might be provided.

25

Although the invention has been described embodied in a pocket-sized personal organiser, it can readily be implemented on personal computers and the like. For larger devices, the optical scanner might be provided as a separate stylus or the like, on a flying lead. A still further embodiment incorporates the invention into a mobile telephone.

## CLAIMS

1. An electronic personal organiser comprising a database for storing directory data, means for storing directory data within the database, and  
5 an opto-electronic data input device adapted to read a printed data pattern which includes directory data in a machine-readable predetermined structured form.
2. An electronic personal organiser according to claim 1 wherein the  
10 opto-electronic data input device comprises a bar-code reader.
3. An electronic personal organiser according to claim 1 or claim 2 wherein the means for storing directory data comprises a decoder adapted to receive the predetermined structured form of data comprising a plurality  
15 of sequential, variable or fixed length character strings in a predetermined order.
4. An electronic personal organiser according to claim 3 wherein the plurality of sequential, variable or fixed length character strings in a predetermined order include a name field, and address field and a telephone number field.  
20
5. An electronic personal organiser according to claim 4 further including a coding database coupled to the decoder, wherein at least one  
25 of the fields includes encoded data, the decoder further including means to decode the encoded data by matching against an entry in the coding database.

6. An electronic personal organiser according to claim 5 wherein the coding database includes address data character strings each linked to a plurality of encoded postcode entries.

5 7. An electronic personal organiser according to claim 6 wherein the coding database includes telephone dialling codes each linked to an address field data string.

8. An electronic personal organiser according to claim 1 wherein the  
10 opto-electronic data input device is integrally formed on an edge of the organiser.

9. An electronic personal organiser according to claim 1 wherein the opto-electronic data input device is coupled to the organiser by a flying  
15 lead.

10. A business card or business stationery item having directory data information corresponding to an individual or company printed thereon in a human readable form, and having the directory data information also  
20 printed thereon in an opto-electronic, machine readable form having a predetermined structure to delineate name, address and telephone number data fields.

25 11. A business card or business stationery item according to claim 10 wherein at least one of the data fields is encoded to correspond to one of a plurality of entries in an electronic coding database.



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**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.N): G4A (AKS) ; H4K (KBNJ)

Int Cl (Ed.6): G06F (3/06, 3/08, 17/30, 17/40)

Other: On-line : WPI, INSPEC, COMPUTER DATABASE

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB-2246491-A (TECHNOPHONE) See whole document	1-4, 8-11
X	GB-2191611-A (PICKERING) See whole document	1-4, 8, 10, 11
X	GB-2169475-A (VARLEY) See whole document	1-3, 8, 10, 11
X	GB-2101842-A (CHIMBER) See whole document	1-3, 9-11
X	GB-2063010-A (STC) See whole document	1-3, 8-11
X	EP-0070697-A2 (LHW AUTO TELEPHONE) See whole document	1-3, 9-11

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